Nashik Maths Circle

March 7, 2026

Delhi Public School, Nashik

Session Overview

The Nashik Maths Circle session on March 7th was conducted by Mr. Prasanna Bhore. The session focused on bridging the gap between abstract algebra and practical logic, utilizing a "problem-first" approach to help students simplify complex mathematical scenarios.

Mathematical Focus: Algebra and Number Theory

The core of the session revolved around identifying relationships between numbers and variables. Key areas explored included:

- **Algebraic Identities:** Using clever observations to manipulate and simplify expressions rather than relying on brute force.
- **Numerical Equations:** Solving equations by analyzing the underlying structure and variable interrelations.
- **Counting Sequences:** Identifying squares and cubes within specific numerical ranges, emphasizing efficiency in counting.

Practical Logic and Real-World Scenarios

A highlight of the session was the application of mathematical reasoning to practical, everyday situations. Students tackled problems involving:

- **Mixture Problems:** Analyzing the ratios and logic involved in mixing different liquids.
- **Currency and Distribution:** Using systematic thinking to solve problems related to counting currency notes and the fair distribution of cards.
- **Logical Reasoning:** Transitioning from word-based scenarios to mathematical models.

Techniques Developed

Throughout the session, students were exposed to several critical problem-solving techniques:

- **Algebraic Manipulation:** Learning how to transform equations into more manageable forms.

- **Clever Observation:** Training the mind to see hidden patterns that simplify complicated calculations.
- **Systematic Counting:** Moving away from manual counting toward structured mathematical methods.

Conclusion

The session was highly engaging, with lively discussions centered on the "eureka" moments that occur when a complex problem is simplified through logic. By experimenting with patterns and algebraic structures, students gained a more intuitive grasp of how to approach multi-disciplinary mathematical challenges.

NASHIK MATHEMATICS CIRCLE

Date: 7th March 2026

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P-1: If

$$a^7 = y^2z^2w^2x$$
$$b^7 = z^2w^2x^2y$$
$$c^7 = w^2x^2y^2z$$
$$d^7 = x^2y^2z^2w$$

Find x,y,z and w in terms of a,b,c and d.

P-2: Two glasses have water in one & equal volume of milk in another. Some water from first glass is poured & mixed in the glass having milk. Then from the glass of milk volume equal to water mixed in it is transferred to glass having water. Does glass having milk has more water than milk in the glass having water?

P-3: There is a group of students who opt for Hindi or Marathi as optional subject. (They can opt for both also) If 10% students opt for both & 180 students opt for Hindi & 70% students have opted for Marathi. Find total number of students.

P-4: From a pack of cards three heaps of cards are made. First heap has thrice black cards than red cards. Second heap has thrice red cards than black cards. Third heap has twice black cards than red cards. Find number of blacks & red cards in each heap.

P-5: a.b = 174375

a.c = 173600

b = c+1 Find a,b & c.

P-6: $(x+y)(x^2+y^2) = 5500$

$(x-y)(x^2-y^2) = 352$

x & y are positive. Find x & y.

P-7: Some students go for a bus trip. They each give 9 notes to the conductor. Two of them are Rs. 2 notes. Total fare is Rs. 841. How many Rs. 10 notes did the conductor receive.

P-8: How many of $1\ to\ 10^6$ numbers are neither square nor cubes.

Ref: - Ganitatil chakoribaheril wata by V. K. Wad.